

MARINE REVIEW.

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CLEVELAND, O., AUGUST 13, 1896.

No. 7.

Three Immense Grain Cargoes.

The Queen City, Coralia and W. D. Rees, three of the largest class of steamers on the lakes, all built in Cleveland during the past winter, carried away from South Chicago within two days 516,130 bushels of corn and 61,650 bushels of wheat, making a total of 577,780 bushels or 16,300 net tons. An idea of the volume of these cargoes may be had from the fact that it would require 5½ miles of freight cars, making 27 trains of 30 cars each, to transport what these steamers did. The cargoes were carried at a cost of an average of 1½ cents a bushel. There was considerable rivalry among the masters of the vessels as to which would carry the largest load. The particulars as given out by the Chicago elevators are as follows:

Queen City—205,500 bushels corn, 5,754 tons, 17½ feet draft.

W. D. Rees—124,500 bushels corn and 61,650 bushels wheat, 5,335 tons, draft not given.

Coralia—186,130 bushels corn, 5,211 tons, 16 feet draft.

It is unfortunate that the Coralia's cargo was for Fairport instead of Buffalo, as there is only 16 feet draft at the elevator at the former port, and her rival was enabled to load 1½ feet deeper. Figuring comparatively, the Queen City on the Coralia's draft would still have some 73 tons more cargo, this leaving them in about the same position as before. The Queen City has the Babcock & Wilcox water tube boilers, while the Coralia, has Scotch boilers. The former are supposed to weigh from 60 to 70 tons less than the boilers in the Coralia.

Steam Yacht Race.

If nothing unusual arises two good-sized steam yachts will race at the Cleveland regatta Thursday afternoon. The yachts are the Enquirer owned by W. J. Conners of Buffalo, and the Say When owned by W. J. White of Cleveland. Both are self-made men, Mr. Conners having gained his wealth in the stevedore system and Mr. White having got his start in the chewing gum business. Both men are plucky in business ventures, and if either withdraws from the race it will be for good cause. Both believe implicitly in the speed of their yachts. The Enquirer was built during this year, having come from the Union Dry Dock Company's yard recently. The Say When was built by the Herreshoffs at Bristol, R. I., in 1888, the hull being of mahogany, while the Enquirer is of steel.

The particulars of the two yachts are as follows:

Enquirer:—146 feet long, 17½ feet beam, and 10 feet deep, having triple engines 10½, 17 and 27 by 16 inches stroke, built by Hodge of Detroit, the boiler being of the water tube type, Taylor pattern and built by the Detroit Screw Works.

Davidson Will Build Two Tugs.

A Detroit correspondent writes as follows: While repair work is about all that is expected at this time at the different marine engine works here, it is very gratifying to note an order that has just been placed with the Frontier Iron Works by Capt. Davidson of West Bay City, for two complete outfits for tug boats. The engines are to be of the fore and aft compound type, cylinders being of 15 and 30 inches diameter by 26 inches stroke. Steam is to be furnished by boilers of 8 feet 6 inches diameter and 13 feet long, with a working pressure of 130 pounds. Independent condensers will be furnished as well as feed pumps, etc. The same firm are making considerable repairs to the Alanson Sumner, a small steam barge lately rebuilt from a tug of the same name.

Engineer For the Chicago Ship Building Co.

The REVIEW has the pleasure of announcing the name of the new superintending and designing engineer of the Chicago Ship Building Company's new engine works. It is Mr. Henry Penton, at present occupying a similar position with S. F. Hodge & Co., Detroit. He will take his new position the first of September. Plans are completed for the new works, and work on them will commence soon.

Beginning with a common school education, Mr. Penton served

an apprenticeship as a machinist, afterwards taking up marine engineering, and has served as chief engineer of various lake and ocean steamers. He gave his spare time to study, whether afloat or ashore, and so acquired a knowledge of mechanical drawing. During two or three winters Mr. Penton was associated with the late H. W. Granger, M. E., of Detroit, really the father of the modern lake marine engine. For five years he was mechanical engineer to the Frontier Iron Works, whose work has become well-known not only on the whole chain of lakes, but on both seaboard. Some of the more remarkable engines that have come from his hands are the W. H. Gilbert, which is said to have beaten the famous Chemung; the Pacific coast steamship City of Everett; the Madagascar and Nicaraugua, whose performance made quite a stir, and the famous whaleback towing steamer Pathfinder. It is said of Mr. Penton and his engines that he has "been there" himself and that his engines are designed not only to do their work cheaply but to be as convenient and handy for the engineer as possible. He is thirty-one years of age and has lots of time yet before him.

Lake Freight Situation.

Grain is moving pretty freely at Chicago at a little better figure than is paid on ore, but otherwise the lake freight market is very quiet and is in practically the same condition it was a week ago. Chicago shippers are taking care of nearly all the wild Lake Michigan traders and only for the activity in that branch of the trade many of the wild carriers would be forced to lay up as ore cargoes are very scarce. Furnace men have in some cases notified ore sales agents that they will not want ore that they arranged for early in the season and shippers have in turn arranged to carry some ore that was covered by lake freight contracts over, and some of it may not be moved until next season, although it will all be brought down if dock room can be found for it. Ore is going forward to the furnaces very slowly and while shipments from the upper lake ports have been cut down materially the docks at the receiving ports are filling up, and some of them are already in pretty bad shape. Rates are unchanged at 60 cents from ports at the head of Lake Superior, 50 cents from Marquette and 40 cents from Escanaba but very little chartering is being done.

Coal boats are offered at 25 cents to all ports and boats from the head of Lake Superior are more plentiful than cargoes. Owing to the loss of time in getting cargoes for Lake Michigan owners of large lake steamers have sent their boats light to Chicago for corn at 1½ cents. Several small vessels have been laid up during the past week, but others that were out of commission have started out again so that the number of boats in ordinary is about the same as it was last week. There is nothing in the outlook that indicates a change and everything points to a quiet freight market the balance of the month. A little grain is moving from the head of Lake Superior but not enough to cut any figure and owners do not look for an active demand for tonnage from that quarter until next month.

Winter's Work for the West Superior Yard.

At the recent meeting of the board of directors of the American Steel Barge Company, enough work was planned to keep the West Superior yard busy during the coming winter. Capt. McDougall is quoted as follows: "We have planned the building of a steamer 408 feet long, 48 feet beam, and 27 feet deep, to be in all respects a duplicate of the John Ericsson, except larger. We will lengthen barges No. 201 and 202 which were brought from the Atlantic coast by putting 61 feet in the middle of each one. We are to build a new dry dock 450 feet long by 100 feet wide at the top and 56 feet wide at the bottom with 19 feet of water over the miter sill. All of this has been approved by the board of directors and the money is ready to pay for it. I am preparing plans and models for the large vessel, getting out details and estimates and doing other work in connection with the commencement of the ship." Work will be commenced as soon as there is assurance of a settled condition of the money market. This may mean until the fall elections are over.

Commending Babcock & Wilcox Boilers.

In a paper read by J. R. Fothergill, at a recent meeting of the Northeast Coast Institution of Engineers and Shipbuilders, was the following letter from the superintending engineer of Wilson Sons & Co., Hull, England:

"I believe we were the first in this country to try Messrs. Babcock & Wilcox's water-tube boilers in a sea-going steamer; this was over three years ago in our steamship Nero. This boiler is running quite satisfactorily, and the ship has not lost a day for boiler repairs up to the present. A few tubes in the feed water heater have been renewed, and probably the whole of them will require renewals shortly, as they appear to corrode very rapidly. In the boiler proper only one or two tubes exposed to the fire have been renewed, at a trifling cost. About twelve months ago we fitted a new steamer, the Hero, with a pair of boilers by the same makers, but somewhat modified in details, no heater was fitted, and the tubes were larger in diameter. We have had considerable trouble with the bottom row of tubes in these boilers, and in consequence of this, in a third ship, the steamship Cameo, which we have fitted with Babcock & Wilcox boilers, we have reverted to the smaller tubes (slightly larger than the Nero's), and up to the present no tubes have given away, neither have any repairs been required to these boilers. As regards consumption, there is not much either way; comparing the steamships Hero, Nero, and Cameo. With our most economical forced draught and ordinary boilers they fall slightly short, but still give as good results as ordinary averages with the ordinary boilers. I think the direction in which economy in consumption is to be sought for in the water-tube boilers is in the arrangement of baffles over or amongst the tubes, so as to properly utilise the heat that frequently too easily goes up the funnel. We have, as you are probably aware, one steamer fitted with four Belleville boilers. We have not been fortunate in our experience with these, but perhaps this has been from causes other than the design although it is certain that the Belleville boiler is more difficult to clean and repair than is the Babcock & Wilcox, whilst with us the consumption has been greater with the Belleville than with the Babcock & Wilcox."

A Look into the Future.

An exchange comments on the opening of the new Soo lock as follows: "The opening of the commerce of the great lakes of the new lock, capable of accommodating vessels of deep draft, is regarded by head of the lake business men and students of transportation as an event of deep significance. Within a short time there will be a minimum depth of 16 feet or more all the way through the connecting waters of Lake Superior and Huron. This means that the Lake Superior ports will be placed on a footing with those of Lake Michigan as regards available draft for transportation of freight to and from the foot of the lake system.

"Chicago will have no advantage over Duluth, in the future in that respect, as she has had in the past. Lake freights from Chicago to the lower end of Lake Erie have ever been lower than from Duluth for the reason that vessels could take a heavier cargo out of the great Lake Michigan metropolis. The completion of the American lock, and the deepening of the shallow places in the St. Mary's river, will adjust the differences between Duluth and Chicago, as regards lake freight rates, for the conditions will no longer be unequal. The distance from Chicago to Buffalo is slightly less than from Duluth, but the facilities for handling freight of all kinds are far superior at Duluth than at Chicago, and that fact more than offsets the advantage of distance.

"It is expected that, with the completion of a deeper channel at the Encampment, rates will experience an equivalent drop at the head of the lakes and that under natural conditions they will never be as high as they have ranged in the past. The opening of the new American lock and the deepening of the river connecting Huron and Lake Superior will be a powerful blow to the small vessels which were such prosperous members of the maritime community seven or eight years ago. There are few of them, however, that have not paid for themselves more than once.

"The greatest and most direct benefit which will accrue to Duluth as a result of the placing of this Lake Superior route on an even basis with the Chicago route, via the lakes, will be the certainty that a vast amount of grain and other products produced in the territory equally distant from Chicago and Duluth, will come that way, instead of going via Chicago. Corn is one of the products which much can be ex-

pected of in this connection. The shipment via Duluth is preferable on account of the better facilities for handling and for other reasons of more or less influence."

In General.

The Harlan & Hollingsworth Co., Wilmington, Del., will build a large ocean tug for the Philadelphia & Reading railroad.

The Pusey & Jones Co., Wilmington, Del., will build a side-wheel passenger steamer for Venezuela service., 131 feet long and 25 feet beam, having two compound engines.

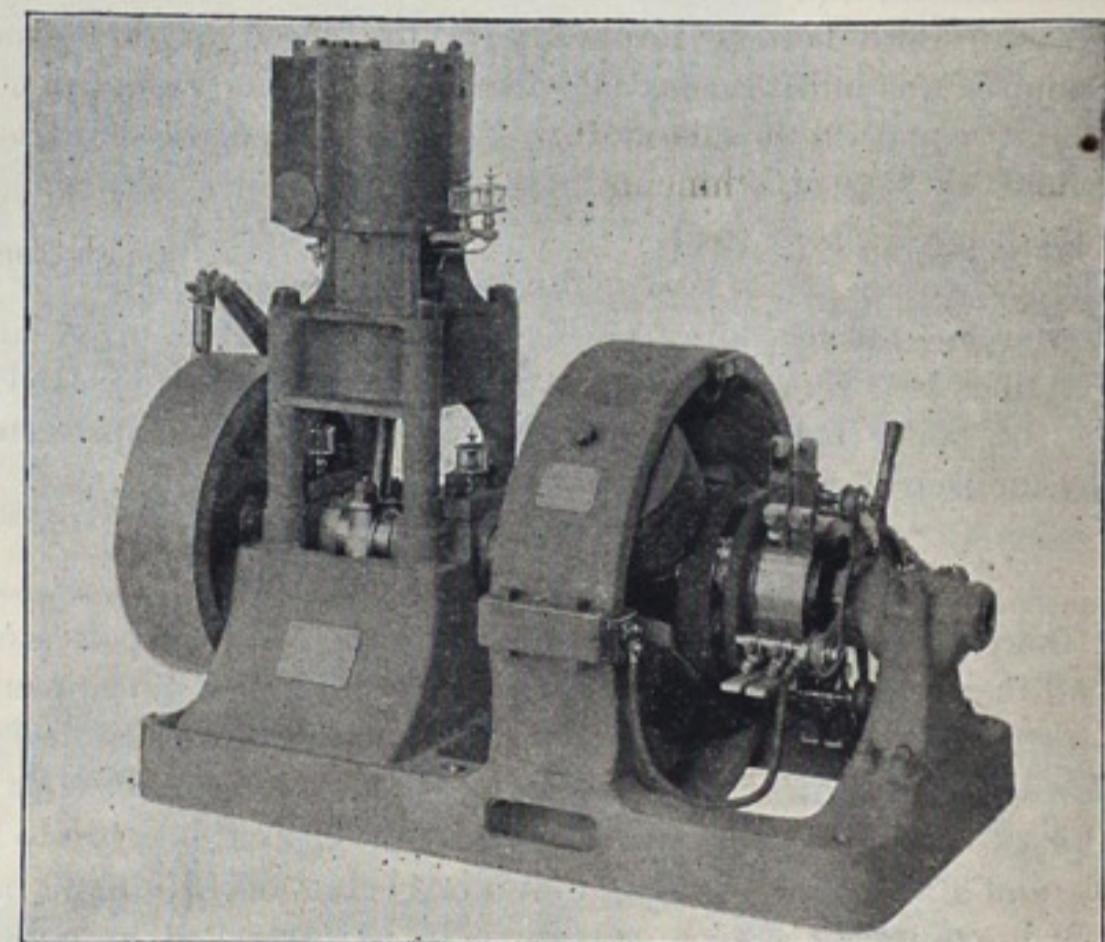
The Richelieu and Ontario Navigation Co., with its usual enterprise, has made soundings in the St. Lawrence river between Coteau and Beauharnois, and has discovered a new channel, which will simplify the navigation of the Split Rock rapids greatly.

The greatest waves known are these on the Cape of Good Hope, where under the influence of a northwest gale, they have been found to exceed 40 feet in height. Off Cape Horn they have been measured at 32 feet from trough to crest, and in the North Atlantic waves from 20 to 25 feet are by no means uncommon. Ordinarily, however, they rarely exceed 8 or 10 feet, and all accounts of their running "mountain high" must be received as mere poetical exaggerations.

A new port for Canadian coal shipments is being constructed on the north side of Cape Breton by an American company, which will work in opposition to the Dominion Coal Company. They are building a breakwater on the northern side of McIsaac's lake, where they intend to dredge the channel into the lake, to keep the sand which is all on the northern side of the intended harbor from filling up the channel when dredged, and to protect the dredge while at work there. They are also building two wharves in the lake, one for general freight and the other for the shipment of coal. The railroad between the coal mines and the lake is nearly all graded.—Marine Journal.

Single Cylinder Engine and Dynamo.

In a recent issue we illustrated and described a compact double cylinder engine and dynamo especially designed by the General Electric Co., for supplying electricity for light and power purposes on shipboard. In addition to this type that company has also designed a single cylinder engine for direct coupling to the dynamo, making a set equally as compact. These single cylinder sets are built in capaci-



ties of 7, 10, 15, and, 25 kilowatts. The engines are of simple design and have but few parts which being constructed to templates and gauges, are interchangeable. They occupy a minimum floor space, the engine bed being carried out to support the dynamos. The weight of the complete sets has been brought down as low as possible, by careful coreing out of the bed, etc., and every part of the engine has been the object of special care both in design and workmanship. The generators are of the multipolar type, with iron-clad armatures. These single cylinder generating sets have already been installed on several vessels, and are now operating successfully in every case.

The Nickel Plate road sells one fare excursion tickets to Erie, Pa., account of the L. A. W. bicycle meet and races, August 17th and 18th.

Around the Lakes.

The schooner Emeline was passed fifteen miles southeast of Death's Door in a capsized condition.

As a result of stranding of the steamer Samoa in the St. Lawrence river, sixty-three broken frames were discovered when she was docked at Buffalo.

The Thompson Tug Line has purchased the tug Crusader and raised her. The tug Brockway took her to Port Huron where she will be rebuilt.

Steamer R. G. Stewart stranded on Wiggins' reef, near Manistique, Mich., while transporting a circus to Escanaba. She was released with slight damage.

Tonnage of the new Minnesota line steamer Maricopa, just completed at the works of the Chicago Ship Building Co., is 4,223.57 gross and 3,669.85 net.

Carkin, Stickney & Cram, Detroit, were the lowest bidders on Sandusky harbor work, and they were awarded the contract amounting to some \$15,000.

The light-house board awarded a contract for constructing seven cribs in Hay lake channel, St. Mary's river, to Eslow & Munroe, of Charlevoix, Mich., at their bid of \$5,622.

The wrecker Root has ceased trying to locate the steamer Pewabic by sweeping, because the sweeper caught on so many rocks. Another trial will be made with the diving-bell and lights.

The steamer Thomas Wilson got away from S. F. Hodge's engine works at 8:30 Saturday morning with her new high pressure cylinder. She went there Thursday and this is considered very quick work.

The Cleveland Dredge Company has six dredges at work at Ashtabula on its 20-foot channel contract with the city, Lake Shore and Pennsylvania railroad companies, and the work is being pushed rapidly.

There seems to be a question as to the extent of the damages to the St. Louis, resulting from collision with the Williams. The owners say she is a total loss, and owners of the Williams say the boat can be repaired at small cost.

The Columbus, Sandusky & Hocking Railroad has leased several car ferries and will bring them to Lake Erie to transport traffic from Sandusky, the northern terminus of the line, to some point on the Canadian shore of Lake Erie.

A diving-bell shipped to Alpena, recently will be operated from the steam barge Jenks in an effort to locate the steel steamer Norman, sunk near Middle island during May, 1895. The bell has telephone and electric attachments.

The light-house board awarded a contract for the erection of a keeper's dwelling and front and rear beacons for the Grassy island north channel light station, Detroit river, to John Ginnett, of Wyandotte, Mich., at his bid of \$5,790.

The establishment of terminals at Manitowoc by the Wisconsin Central and Chicago & Northwestern railways has attracted the attention of the Lehigh Valley railway people, and steamers of their fleet will hereafter stop there for package freight.

Rev. Sarah Bromwell consulted recently with the Graham & Morton Co., concerning the \$10,000 reward offered for the discovery of the lost steamer Chicora. She claims to have interviewed the spirits of those lost in the boat, and says that it lies in 40 feet of water.

There are 75,000 tons of iron ore on the Missabe dock in Duluth, and 500 car loads waiting to get into the dock. The Duluth & Iron Range road has laid off a number of ore trains, and a large number of men employed in making improvements, which were deemed necessary a while ago.

According to reports current at Muskegon, Mich., the Chicago & West Michigan Railroad Company and the Crosby Transportation company have entered into an arrangement whereby the latter company is to put on next winter between Muskegon and Milwaukee a steamer to run in connection with the road. It is not known whether one will be built or chartered.

Capt. Dunn of the Canadian steamer Petrel has located a wreck in Lake Erie 22 miles south and west from Rond Eau, three miles north of the boundary line. It is supposed to be the Little Wissahickon, lost with four of her crew last month in tow of the Donald-

son. The wreck of the schooner Dauntless, lost on the same day in the same storm was also discovered the same day.

The steamer Brazil arrived at Sheboygan at 5 o'clock Friday morning with 2,953 tons of coal. It was unloaded and at noon Saturday, she was at the Armour elevator. At 5 o'clock she had on board 105,000 bushels of corn. At 5 o'clock Sunday she was abreast of Sheboygan bound down, having handled 6,000 tons of cargo and navigated 280 miles in forty-eight hours.

Col. Smith, U. S. engineer, Cleveland, suggests having a steel steamer built at a cost not to exceed \$20,000, which should replace the steamer Swansea. It is recommended in the interest of economy that \$10,000 be taken from the Toledo appropriation, \$2,000 from the Cleveland, \$1,500 each from Sandusky, Lorain, Fairport and Ashtabula, \$1,000 from Conneaut, and small sums from other ports to make up the \$20,000.

The death of Capt. Richard D. Gardner, of the steamer Commodore, removes one of the most faithful and efficient masters in the lake service. He was in the Western line twenty-six years, which he entered as a boy of 18, being only 44 at the time of his death. When he left his boat about three weeks ago it was supposed that he would soon be able to return to her. He lived in Buffalo and leaves a widow and five children.

The funeral of Mrs. Helen Bradley, widow of Capt. Alva Bradley, and mother of M. A. Bradley, was held Sunday in Cleveland. The services were conducted by Chaplain Jones, Rev. Oliver Burgess, and Prof. Currier. The pall-bearers, were the following well-known vessel men, business associates of the father and son: W. C. Richardson, Capt. George Stone, George Warmington, L. A. Cobb, J. H. Palmer, and J. C. Gilchrist. She was known as one of the most philanthropic women in the city.

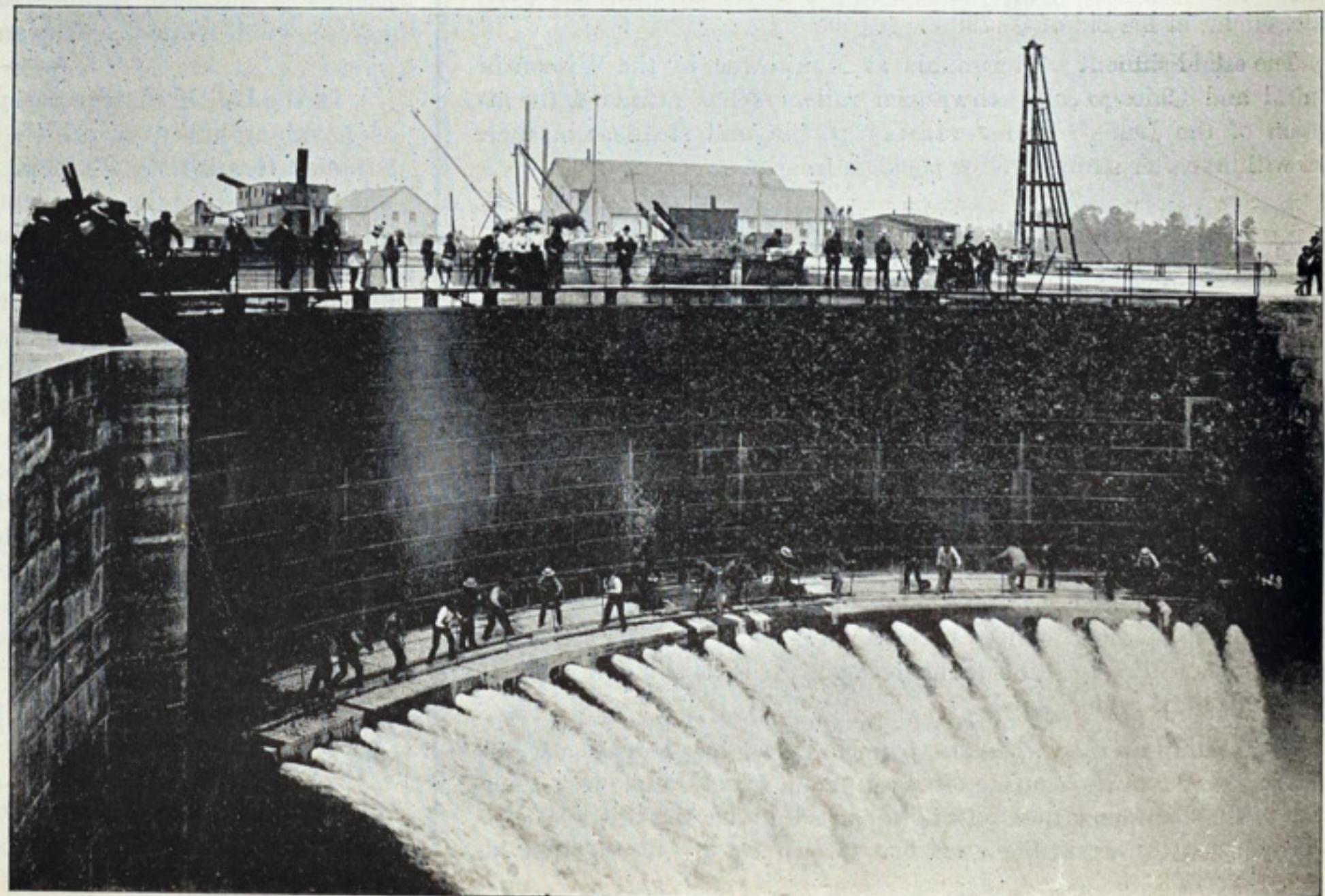
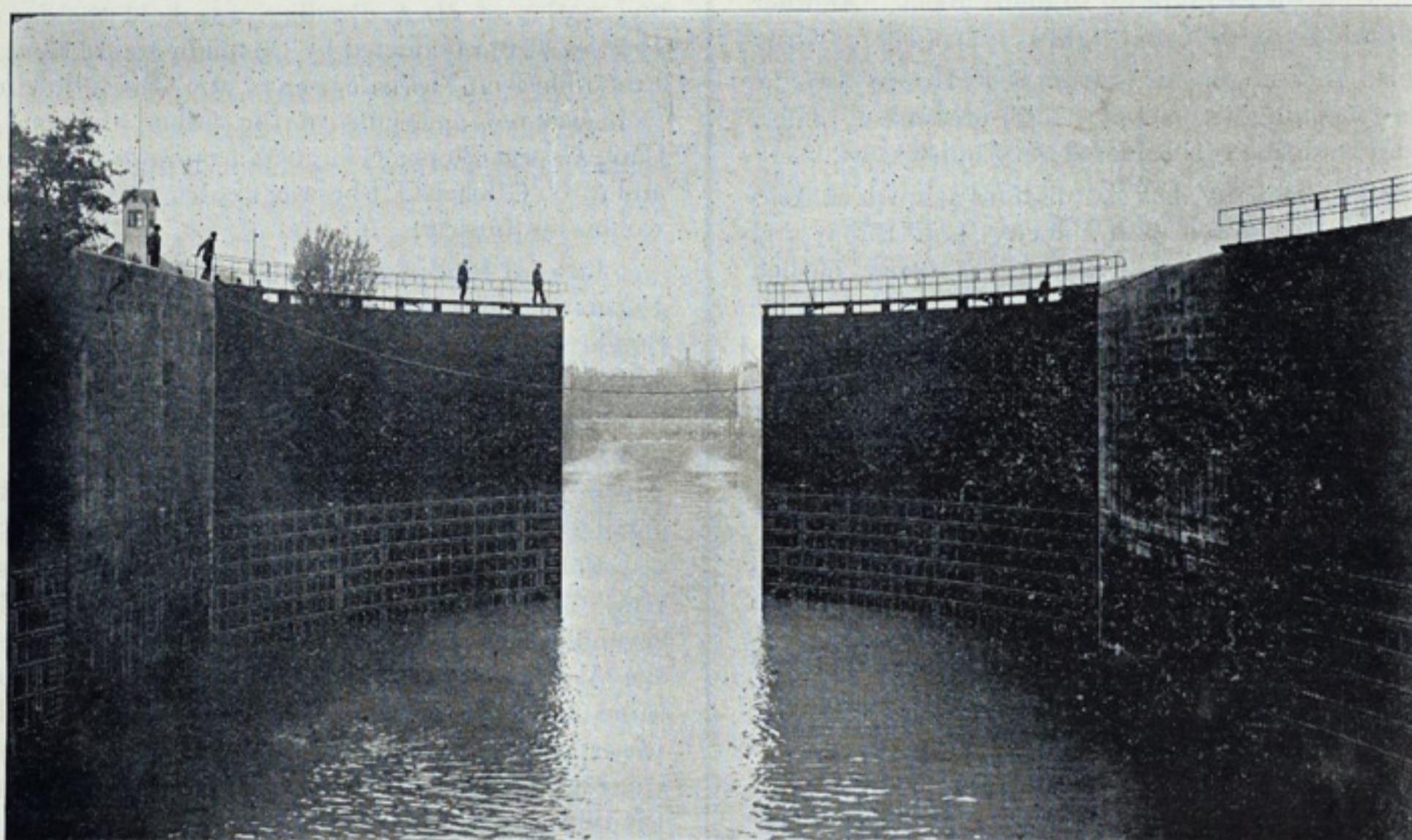
Edward Henkel was instantly killed as a result of the steamer Normandie, sheering into his steam yacht Azalia, lying at Port Huron, Sunday. The yacht was starting on a cruise to Mackinaw and Georgian Bay. He was in the grocery business in Detroit and his father is a well-known capitalist. A letter from him to the REVIEW concerning charts for the trip he was about to take arrived at the same time as papers announcing the accident. The steamer Saginaw was also injured at the same time. The Normandie was in charge of the mate.

Following are dates of some early lake passenger steamer disasters: In 1831 the William Peacock burst her boiler, scalding to death seventeen persons, besides injuring many others. A steamer called the Washington was soon after wrecked, and another steamer of the same name, June 16, 1838, was burned and a large number of her passengers lost their lives. On Aug. 9, 1841, the Erie burned and became a total loss. Over three hundred passengers on board of her at the time were either drowned or burned to death. On June 17, 1850, the G. P. Griffith was burned, with a great sacrifice of life. The Lady Elgin was the next steamer to burn. The Atlantic foundered in a gale of wind, while the Caspian went to pieces in a storm.

In the United States navy yard at Brooklyn is a curious specimen of naval architecture, which is styled the "Intelligent Whale," although that is not its official name. It is a submarine boat, which was purchased by the government some years ago, and which was intended to be used in fastening torpedoes under war ships. It is a stumpy cigar-shaped boat, with its midship diameter equal to about half the length; on top is a conning tower for the steersman, whose head is in this tower or dome, while projecting side windows are also provided, affording a view forward, the windows being all protected by outside gratings. At the stern is a screw propeller, which is driven by four men by means of gearing. Movable horizontal rudders or fins control the depth of flotation. The boat was to carry a crew of thirteen persons. During a test several years ago, in the North river, the boat went to the bottom and did not rise, and before it could be raised by wrecking derricks all the men were killed. The craft was afterwards removed to the navy yard and placed on dry land in a deserted corner, where it now remains.

It is estimated that the loss on machinery, shops, etc. from the big fire at the shipbuilding works of Harland & Wolff, Belfast, Ireland, will foot up \$1,250,000.

Excursion rates to Omaha via the Nickel Plate road, August 16 to 24th account of the Y. P. C. U. of U. S. Inquire of agents. 230 23.



NEW 800-FOOT POE LOCK, SAULT STE MARIE.

Water-Tube Versus Cylindrical Boilers.

Editor MARINE REVIEW:—Although I may not always agree with your deductions, your editorials always interest me. In your issue of July 30th you admonish your readers to "Look for a boom in water-tube boilers," and you state that every issue of English trade journals of late brings accounts of the adoption of water-tube boilers in vessels of all kinds, etc. etc. That the "intensity" of this boom is more imaginary than real, I will with your permission endeavor to demonstrate.

When cylindrical boilers are used in steamers—as they are in at least nineteen-twentieths of all those constructed the world over—the manufacturers of them do not find it necessary to "proclaim" the fact from the "house-tops," as if it were some "unusual occurrence;" while the water tubular men, on the other hand, are "vociferous" every time they get an order, and make such a "hubub" about it, that the "uninitiated" are apt to conjecture that they are doing a "tremendous" business. I think I have remarked before in one of my communications to the REVIEW, that "facts are stubborn things." To illustrate—steamers, as a rule, are run to make money for their owners. Steam yachts are an exception to this rule, and so are the navies of the world. There would be about as much sense in adopting water-tube boilers because the British or any other navy had adopted them, as there would be in adopting for the mercantile marine the same style of engines and other appurtenances that are put into pleasure craft or fighting machines, where the cost of maintenance cuts no figure or is a secondary consideration.

Now for those "stubborn facts." Thirty years ago it required $4\frac{1}{2}$ lbs. of coal to produce one indicated horse power in marine practice. To-day, in the most advanced practice with cylindrical boilers, it requires 1.07 lbs. of coal to produce one I. H. P. or less than one-fourth; and if any of your readers are sufficiently interested to know exactly how this is done, I beg to refer them to an article in Cassier's Magazine for this month on "Five Crank Marine Engines," by Thos. Mudd, with a cut of the engines. It is almost unnecessary for me to state, that this remarkable result is partially brought about by the use of Servé ribbed tubes in combination with the Ellis & Eaves induced or suction draft, and that by the use of these advanced appliances, the weight of cylindrical boilers for a given I. H. P. can be reduced about one-third from the weight required to produce the same power with cylindrical boilers with plain tubes and natural draft.

Neither you nor I will live to see cylindrical boilers superseded by the water-tubular type for the mercantile marine, for the simple reason that it "won't pay," to say nothing of other insuperable objections. The required power can always be obtained at less cost with cylindrical boilers if interested parties go the right way about it; and with less weight, if the increased quantity of coal it is necessary to carry is considered, to say nothing of the increased space taken up in a steamer by water-tubular boilers, which in many instances is enormously greater.

The steamer Inchmona referred to in Cassier's Magazine, belongs to Messrs. Hamilton Fraser & Co. of Liverpool, and was built by Messrs. Wm. Gray & Co., West Hartlepool, England. She is quadruple expansion and is the first steamer ever fitted with five cranks. Why five cranks instead of four, is fully and lucidly explained by Mr. Thomas Mudd, who has written the article.

The Inchmona is carrying 5,000 tons of cargo at 9 knots on a daily consumption of $11\frac{1}{2}$ tons of coal with a working pressure of 255 pounds. If you know of any steamers fitted with water-tubular boilers that are doing as well, or anywhere near as well, in point of economy, you will doubtless confer a favor upon many of your readers who are interested in ships, by "putting them in evidence" to sustain your prediction.

Very truly yours,

New York, August 11, 1896.

C. W. WHITNEY.

Pleased With Howden Hot Draft.

Editor MARINE REVIEW: Within the past few days, I have been aboard two lake steamers that have boilers fitted with Howden hot draft appliances, and as I have noticed some reference to this system of draft in recent issues of the REVIEW, it occurred to me that you would be interested in a few additional notes on the subject. The big side-wheel steamer City of Buffalo has the Howden draft, and Mr. T. F. Newman, general manager of the company, whom I met before boarding that steamer, told me that she was running on $2\frac{1}{2}$ tons of

coal an hour, all of it Ohio grade, which is not as good as the Pittsburgh steam coals. As the ordinary 3,000-ton lake freight steamer, running only 12 to 13 miles an hour, burns full two tons of coal per hour, it would seem that the fuel consumption of the City of Buffalo is very low, especially when it is known that she runs regularly 18 or 19 miles an hour, and has as many as twelve auxiliary engines. But Mr. Newman, who is very much pleased on account of the low consumption of fuel on the Buffalo, makes a stronger comparison, as he says that she burns practically no more fuel than the State of Ohio, the older boat of the line.

But aside from the question of economy, the great advantage of this draft to my mind is the positive blessing that it secures to men in the stokehold, which can be left open. This is a great advance over any closed stokehold system, which as the name forced draft implies, involves the closing up of all openings between the hold and the outside air, the interior of the stokehold being under constant pressure of air. I have wondered why men who have vessels that are heavy consumers of fuel have not taken more readily to this system of draft. Sometimes I think it is because they are slow to try new appliances of any kind, fearing complications, annoyances to engineers, etc. But there is nothing to annoy an engineer and nothing complicated about this system. The air is simply drawn by means of a fan through heating chambers situated at the front ends of the boilers, where it is heated by the gases from the furnaces as they pass to the smoke-stack. Engine room as well as fire hold is cooled by it. An ordinary fan works noiselessly and takes up little room, and the power required to work it is hardly worth mentioning, as it would not be more than five horse power on a freight steamer having main engines that would develop 1,500 horse power.

M.

Chicago, Ill., August 10, 1896.

Conrad Starke.

As a result of being thrown from his buggy, Conrad Starke died at his residence in Milwaukee Saturday morning. The deceased was born in Kohlenfels, province of Hanover, Germany, fifty-two years



ago, and settled in America nine years later. He came to Milwaukee with his brothers, C. H. and Henry Starke, and some time later they engaged in the towing business. Capt. Starke was also president of the Sheriffs Manufacturing Company, and was the sole proprietor of the steamer E. A. Shores. He had a large interest in the fleet of vessels owned by the Milwaukee Tug Boat company. Capt. Starke was first in command of the tug L. H. Boole. He then owned and commanded the tug G. W. Tiffet, later the E. L. Anthony and finally the tug J. J. Hagerman. He was known as a straightforward, honest citizen and was noted for his generosity and at the same time for a remarkable firmness of character. He knew no fear and was often found running a tug when no one else would venture out. He was an honorary member of Milwaukee branch of the Shipmaster's association.



DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

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binders sent, post paid, \$1.00. Advertising rates on application.

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The books of the United States treasury department on June 30, 1895, contained the names of the 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1895, was 360 and their aggregate gross tonnage 643,260.40; the number of vessels of this class owned in all other parts of the country on the same date was 309 and their tonnage 632,598.72, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

	Number.	Gross
		Tonnage.
Steam vessels.....	1,753	857,735.13
Sailing vessels	1,100	300,642.10
Unrigged.....	487	83,081.91
Total.....	3,342	1,241,459.14

The gross registered tonnage of the vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1891.....	204	111,856.45
" " 1892.....	169	45,968.98
" " 1893.....	175	99,271.24
" " 1894.....	106	41,984.61
" " 1895.....	93	36,352.70
Total.....	347	335,433.98

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895*	1894	1893	1895	1894	1893
No. vessel passages.....	17,956	14,491	11,008	3,434	3,352	3,341
Tonnage, net registered.....	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of navigation.....	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about $\frac{1}{2}$ per cent. of the whole, but largely in American vessels.

THUS far the slump in lake freights has not been connected with the political condition of the country, except by the general assertion that presidential years are not conducive to good business health. During the past week there has come to the notice of the REVIEW two important matters that assume to bring the lake business into direct connection with the political situation. Holders of heavy interests in other lines have stated in a general way that they would withhold investments or shut down manufactories if their confidence was destroyed by the election of a party whose policy they believed would injure such interests. In all these cases nothing is apparently as definite as the announcement made by Alexander McDougall, general manager of the American Steel Barge Co., West Superior, Wis. After giving details of plans involving the building of a new steamer and dry dock and lengthening two barges, amounting to something like \$1,000,000, he says that the prosecution of all this work depends upon the effect of the free silver agitation. He is quoted as follows: "We are going right ahead with the plans for the new boat and the new dock," said Capt. McDougall, "but how far we will prosecute our plans will depend upon the result of this silver agitation. We have the money appropriated for this work, but how far it will be spent depends upon the election and the sentiment of the people on the money question. The matter is left entirely with our executive committee and it will use its judgment in the carrying out of the plans which have been outlined. We are going ahead here, but the committee is liable to call the turn on us at any moment."

The other instance is given in an editorial in the New York Tribune, marked and mailed to the REVIEW. It says that the free silver agitation is responsible for the closing down of the important iron mines in Michigan, which but for this it is claimed would be operated as usual. In this case the fact of the mines being closed would seem to indicate that it is not the result of political fever, for men do not close up capital producing concerns to make political capital. As to the proposed withholding of a \$1,000,000 investment in case of the triumph of free silver, that is in the future, and workingmen in the West Superior and other lake ship yards can heed or ignore it if their own political conscience so dictates, but it involves the responsibility of gambling with employment for the winter. If the election of a silver man does jeopardize the ship-building and mining capitalists' interests and they do withhold investments through lack of confidence they can say to the workingmen "I told you so," and "You made your bed, now lie on it."

THE continuation of low freights gives weight to the suggestion of W. A. Livingstone, that unloading charges and fuel ought to bear part of the burden of the losses sustained in the present crisis. He is quoted as follows:

"One of the factors which is contributing to the hard times which the vessel operators are experiencing, is the fact that unloading charges and fuel are away up. Last year when the freight market was down nearly to where it is now, unloading charges on ore went down to 13 or 13½ cents almost universally. Later when the boom came the charges were put up to 15 and 16 cents and in some places to 18 cents, and no vessel owners kicked, because they were getting good freight rates and were willing that others should share in the good times. But this year, with the market way down, the unloading charges remain where they were during the boom last fall and fueling charges are correspondingly high. It seems to me that it is time for the cost of unloading and fueling to be cut down so that the vessel owners may have a little chance."

THE additional draught of 1½ feet to be obtained soon through the opening of the new Soo lock and other improvements, will add from 200 to 500 tons capacity to some 400 hundred vessels of the modern lake fleet. Estimating that only half of these vessels 200 will have the advantage of this through engaging in the Lake Superior trade, and figuring that the average increase of cargo capacity at 300 tons there would be a total increase of 60,000 tons capacity each trip. The new Rockefeller fleet will have a total capacity of 40,000 tons per trip. Thus for the last two months of navigation there will be an increase of 100,000 tons capacity per trip in the lake fleet. Figure five round trips during this two months, and 500,000, a half million tons more grain and ore than was produced last year, will be needed to satisfy the fleet for the down trips and 500,000 tons more coal and commodities for the up-bound trip. This is not figuring on 16 feet draft until October 1, nor is the Rockefeller fleet capacity figured until that time, although a number of them are now in commission.

"A correspondent writing to the secretary of Lloyds says he is informed on very good authority that the Spanish government contemplate augmenting the 'navigation tax,' an export duty on ores and minerals, which at present ranges from 1 peseta per 1,000 kilograms on smelted metal to a minimum on 25 centimos on crude ore. This tax falls on the shipowner, not on the merchant." If the same tax is levied on vessels carrying Cuban ore it may reduce the difference in price between that and Lake Superior ore at eastern furnaces.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes on Aug. 8, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago.....	13,583,000	6,402,000
Duluth.....	6,267,000	12,000
Milwaukee.....	151,000	1,000
Detroit.....	301,000	14,000
Toledo	613,000	71,000
Buffalo.....	1,105,000	452,000
Total.....	22,020,000	6,952,000

As compared with a week ago, the above figures show at the several points named a decrease of 1,195,000 bushels of wheat, and an increase of 1,080,000 bushels of corn.

Go to picturesque Mackinac island via the D. & C. coast line. It only costs \$13.50 from Detroit, \$15.50 from Toledo, \$18.00 from Cleveland for the round trip, including meals and berths. Tickets good for 60 days, bicycles carried free. One thousand miles of lake and river-riding on new modern steel steamers for the above rates. Send two cents for illustrated pamphlets. Address A. A. Schantz, G. P. A., Detroit.

Special train excursion to Niagara Falls via the popular Nickel Plate road, Saturday, August 8. Train leaves Broadway depot at 10 p. m. \$3.50 for the round trip. Tickets good returning until August 10.

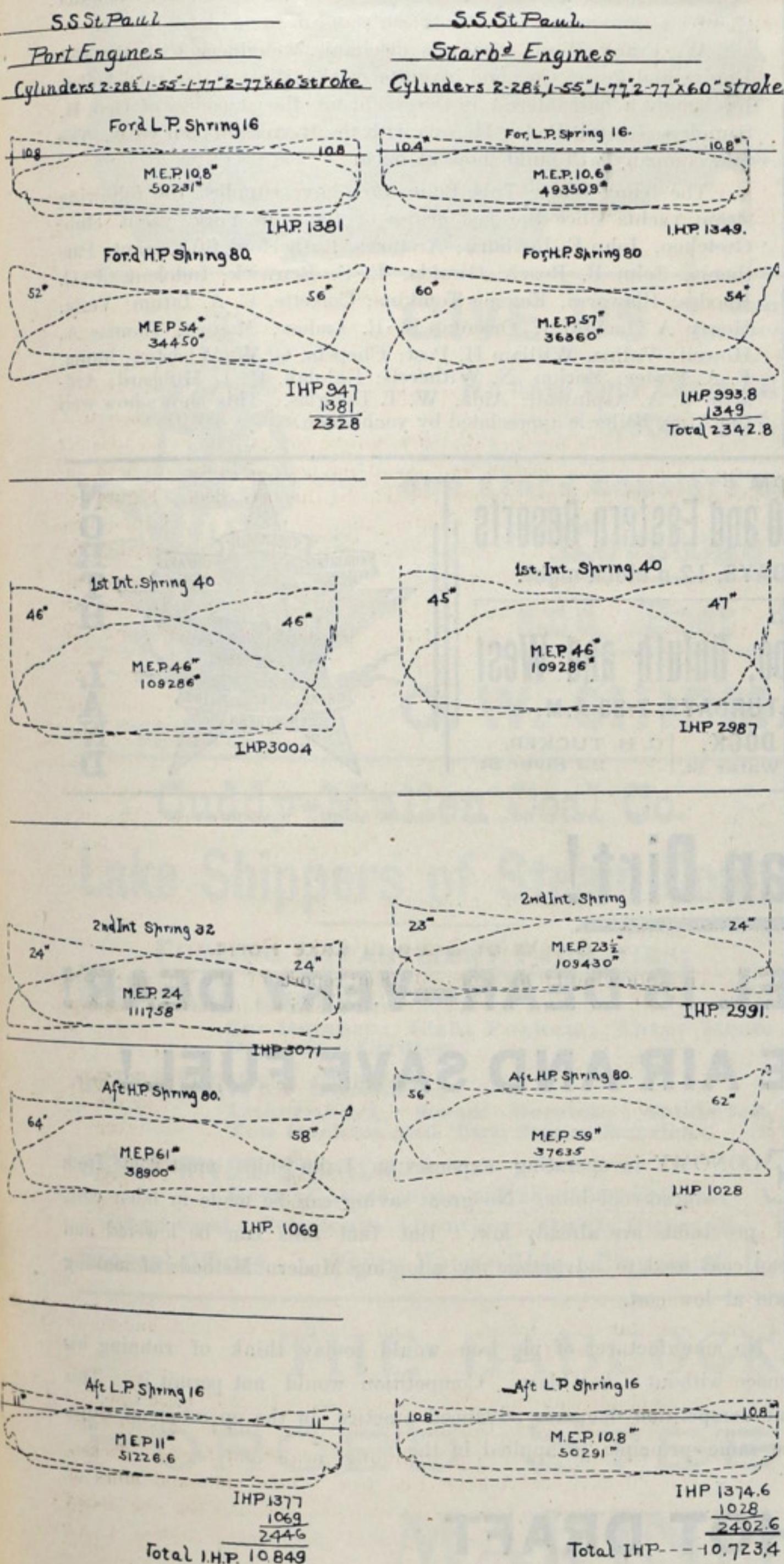
221-Aug. 8.

The Y. P. C. U. of U. S. Convention will be held at Omaha, and the Nickel Plate road will offer excursion tickets for sale, August 16th to 24th.

234 Aug. 23.

Great Economy of the St. Paul's Engines.

When the illustration and full descriptions of the St. Paul's engines were published in the REVIEW, of July 23, there was no data showing actual performance. Since then a full set of cards showing both engines and the data below, has been furnished. Transatlantic steamer lines are very jealous of indicator cards and working data. The competition is so keen to beat the record that they watch one an-



certainly a great compliment to the ability of Wm. Cramp & Sons as engine builders. Following is the data:

CARDS TAKEN JUNE 22, 1896.

Boiler pressure	198 pounds.
Vacuum.....	25"
Revo'l's port eng'ne.....	90.7
M. E. P. to L. P. port engine.....	42.5
Total I. H. P. port engine.....	10849.
Revo'l's starboard engine.....	90.2
M. E. P to L. P. starboard engine.....	42.1
Total I. H. P. starboard engine.....	10723.4
Total I. H. P. both engines.....	21572.4
Knots per hour.....	21.1
Temperature of feed water.....	210°
Temperature of discharge.....	116°
Temperature of sea.....	60°
Coal per 24 hours, tons.....	315.
Coal per I. H. P. per hour.....	21250=1.22 lbs.
Area of fire grate.....	1144.4 ft.
I. H. P. per foot grate.....	18.85
Howden forced draft system	
Draft in ashpit.....	2"
Expansion full gear	
2-77"=1-109" L. P. cylinder	

Found in Old Ships.

The utilization of apparent waste is well exemplified in the breaking up of ships of various kinds, for every nail and every chip are put aside for sale; but in the case of vessels of considerable tonnage, and especially of very old craft, finds both curious and valuable are by no means rare. To give a recent instance, an old wooden vessel that was broken up near Greenwich, only a few months back, revealed a very curious sight when some old planking in the forecastle had been torn down. Here, nailed up, were the two mummified hands of a negro, and in the palm of each hand, and transfixed by the same nails that help the hands, were two counterfeit silver dollars. The hands had been heckled off roughly. A year or two ago the breaking up of an old schooner near Sheerness brought to light beneath the inner skin of the hull quite an elaborate armament of a very old-fashioned kind, and a friend of the writer secured from among the many weapons included a splendidly made bell-mouthed flint-lock musket, the stock being marked with a representation of arm and leg fetters, and the name "Philip Steyne, Boston, Lincolnshire." The most curious part of this find was a set of books—a privateer's books evidently—showing the capture of various French vessels. Tied up in a canvas bag 190 guineas of gold were found a year or two back during the breaking up of an old vessel lying between Birkenhead and New Brighton. With the money were found, too, a most curious and unique set of foreign playing cards, some loaded dice, and three magnificent pieces of amber. All these were found in the false bottom of a wooden bunk.

But even during the breaking up of quite modern vessels, which have become wrecks, remarkable finds, particularly relating to smuggling contrivances, are by no means rare. In a portion of a considerable wreck on the south-east coast only the winter before last the ship breakers found, hidden in a part of the engine room, a quantity of valuable jewelry and a number of newspaper clippings, and published portraits relating to a murder and robbery at St. Louis, in the United States. The jewelry found was that described in the reports as missing. Two of the men employed in the engine room were drowned in the wreck, but, so far as all inquiries made by the police could show, there was no clue to attach either the drowned men or the other engine-room hands with the published description and portraits of the murderer. The mystery was never cleared up. The manager of a ship breaker, a man who has been for forty years in the business, and who was especially sought out by the writer, told the latter that he could cite some hundreds of cases where hiding places for small articles smuggled by officers and men had been found, these being in connection with nearly every part of the hulls broken up, and he produced several articles that had been found by himself or his men. Many of these were false or duplicate bills of lading, and there were counterfeit foreign coins, a pair of heavy gold earrings with turquoise in each—probably stolen by one foreign seaman from another—a hand grenade with a cap to it, an old wig with three small gold nuggets wrapped in it and many other small trifles.

"At Rotherhithe, some years ago," said he, "in the forepeak of a very old wooden merchantman, we found the skeleton of a lad jammed behind the skin of a vessel. The lad had been a stowaway in all probability. A gentleman at Rotherhithe keeps the skull now, or did till lately."—English Magazine.

other like hawks. These are the first cards published from these new American liners, and they are especially interesting considering the record breaking time made by them recently.

We believe the data will show them to be the most economical engines of the kind in the world. The consumption of 1.22 pounds of coal per I. H. P. shows an economy that is not obtained in merchant service, and it is doubtful if the Campania can equal it. The cards are

Summer Outings.

Within a few days the Niagara Navigation Company will add its new steamer to the fleet of fast steamers running between Lewiston and Toronto. The regularity and number of trips make it as convenient as a ferry. Any one visiting Niagara Falls should not fail to run down to Lewiston on the Gorge road and take a ride to Toronto and return on these steamers, the service of which is not surpassed on the lakes.

Tourists certainly owe a debt of gratitude to the Quebec & Lake St. John Railway for opening up at an expense of \$6,000,000, such a wild stretch of scenery along its line of 190 miles. Anglers have built club houses along the road, and eastern capitalists and foreigners patronize it freely. It is used a great deal by parties taking the Saguenay trip, going up by rail and descending by steamer, which avoids the unpleasant feature of traversing the same route twice. A large hotel at Roberval and one at Grand Discharge on Lake St. John are headquarters for ouananiche angling. Write the company at Quebec for a panoramic guide.

Three of the very handsome steamers that traverse Lake Champlain and Lake George have paddle wheels, and those wheels in the Vermont and Horicon are propelled by some interesting engines, built by Fletcher & Harrison, now the W. & A. Fletcher Co., in 1871 and 1875. The service on the two lakes with its railroad connections is very complete, and forms an important link in the summer tourist

travel of the East. A great deal of the Adirondack travel goes that way, and all the important summer hotels on either one of these historical lakes are landing places. Particulars may be had by addressing the Champlain Transportation Company, Burlington, Vt.

Trade Notes.

A. H. Cummings, president of the Mason City, Iowa, board of education, writes the Buffalo Forge Co., that their heating and ventilating system gives satisfaction and is more economical than hot water or air.

W. Frank West, who was mechanical engineer with the Gas Engine and Power Co., and inventor of the West water-tube boiler, has bought a half interest in the yacht building business of Geo. H. Saunders, Bristol, R. I. He was with the Herreshoffs ten years. The new company will build shops at once.

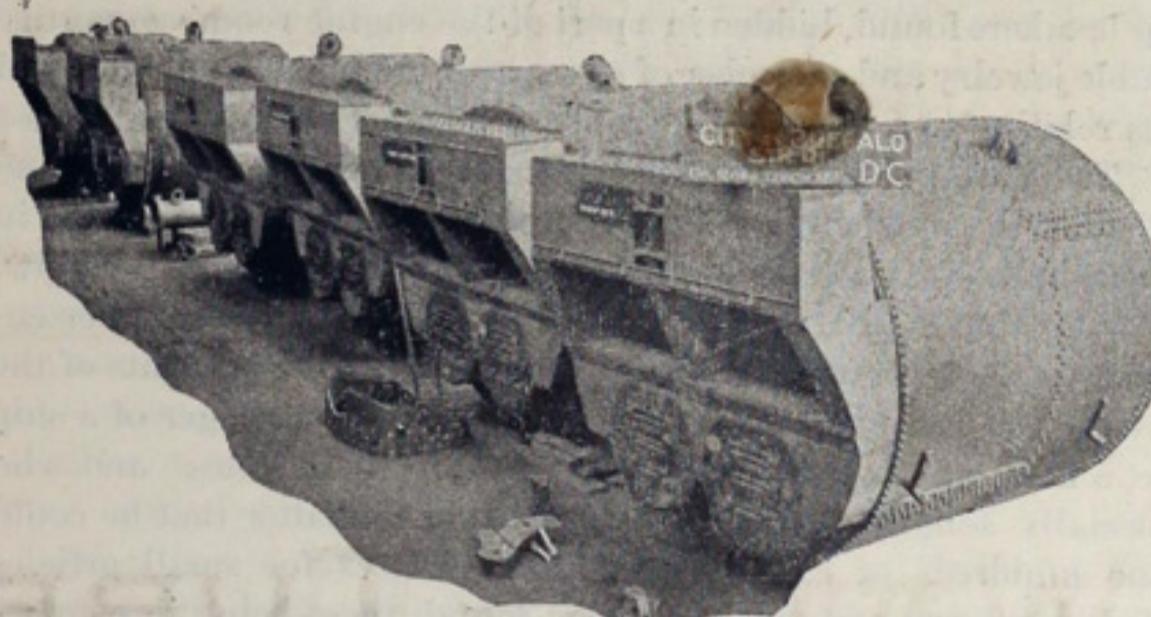
The Almy Water Tube Boiler Co., have supplied the following steam yachts since the last cruise of the New York yacht club: Gretchen, John E. Reyburn; Arcturus, Rutherford Stuyvesant; Parthenia, John B. Roach; Giralda, E. S. Renwick; Indolent, J. C. Rhodes; Illawarra, Eugene Tomkins; Corsette, C. A. Tatum; Vesta, Henry A. Laughlin; Orienta, E. R. Ladew; Magnet, Thomas A. Howell; Valina, William H. Post; Chepeta, C. W. Wharton; Iduna, F. A. Foster; Marion, N. Witherell; Kalolah, C. L. Hubbard; Ardath, J. A. Aspinwall; Aida, W. T. Douglas. This shows how well the Almy boiler is appreciated by yachtsmen.

FROM
CLEVELAND to BUFFALO and Eastern Resorts
MONDAYS and THURSDAYS, 12 o'clock night.
TO
Detroit, Mackinac, Soo, Duluth and West
WEDNESDAYS and SATURDAYS, 7:30 A.M.
D. J. COLLVER, 239 Superior St. | NEW DOCK, Foot of Water St. | C. H. TUCKER, 23 River St.

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USE AIR AND SAVE FUEL!



Six Boilers with Howden Hot Draft appliances now in Side-Weel Steamer City of Buffalo. Dimensions of each boiler—12 ft. 6 in. diameter by 12 ft. length.

ECONOMY in operating expenses on Lake Ships must come from reduced coal bills. No great saving can be made in labor cost, and provisions are already low. But fuel bills can be lowered and cheap coal used to advantage by adopting Modern Methods of making steam at low cost.

No manufacturer of pig iron would to-day think of running his furnace without a hot blast. Competition would not permit it. This same competition demands advanced practice in the operation of ships. The same principle is applied in the

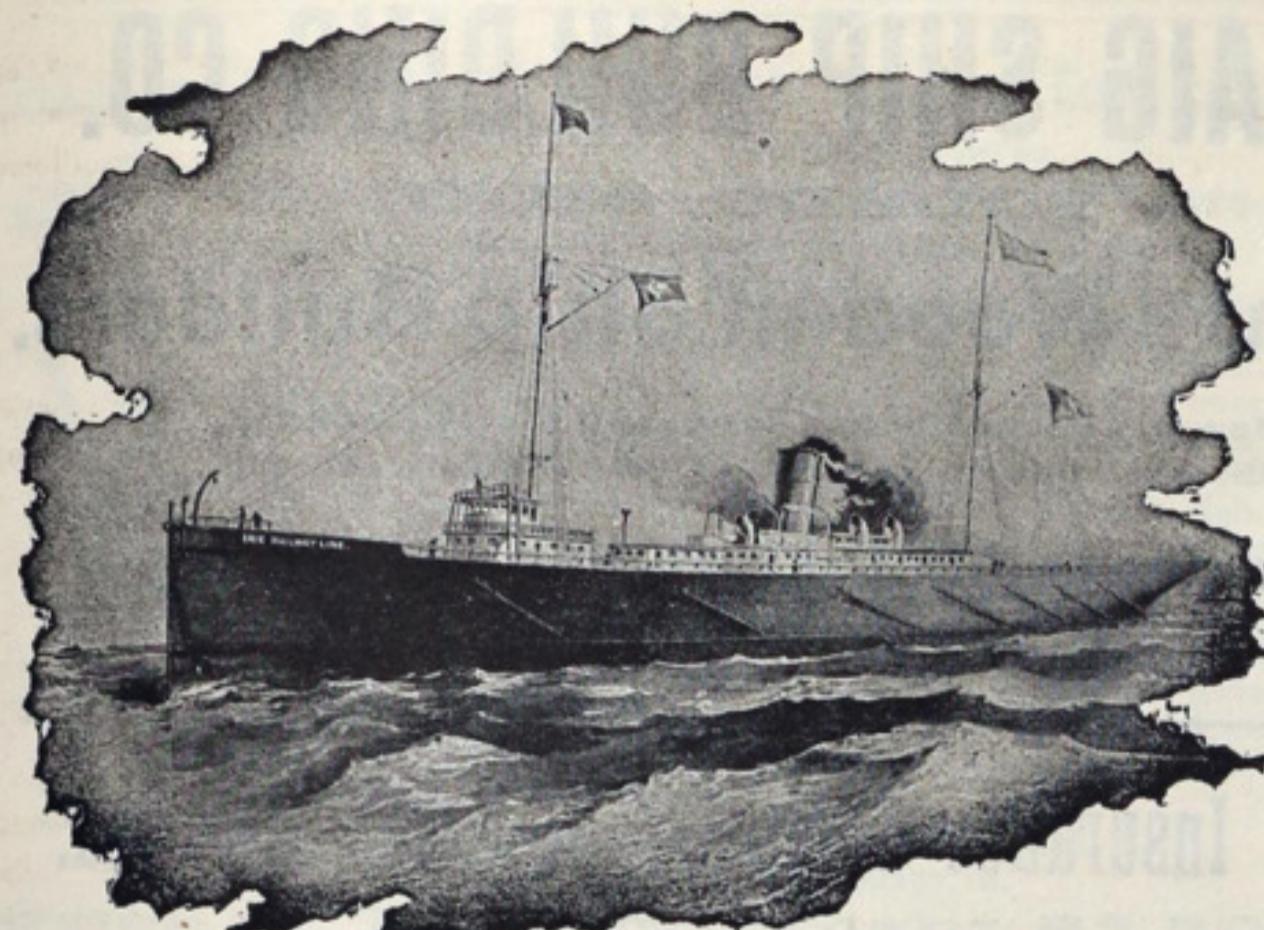
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SAULT RIVER BRANCH—

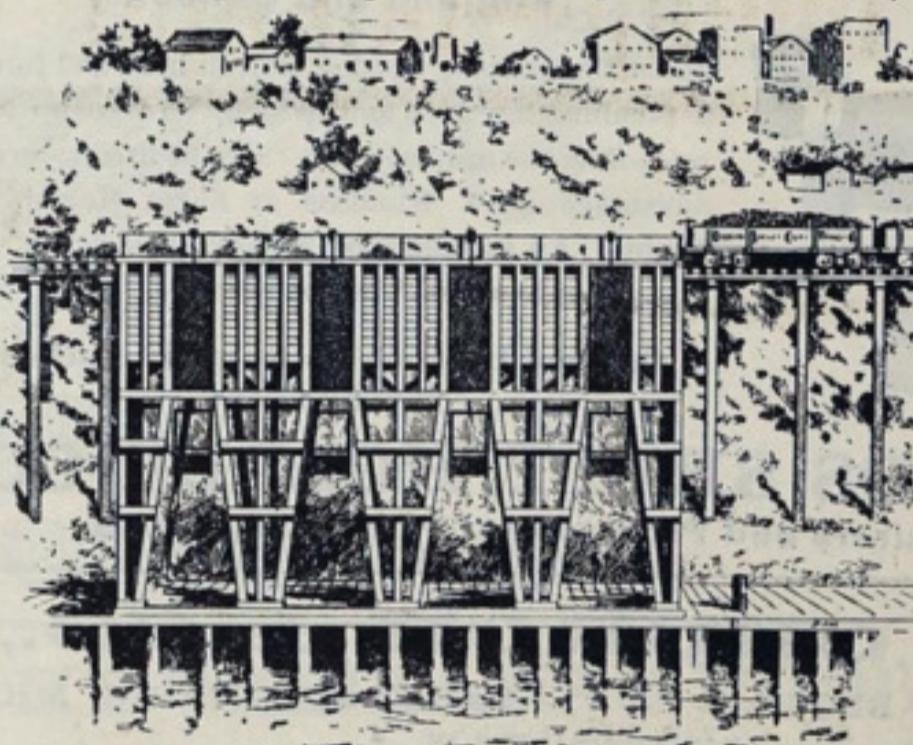
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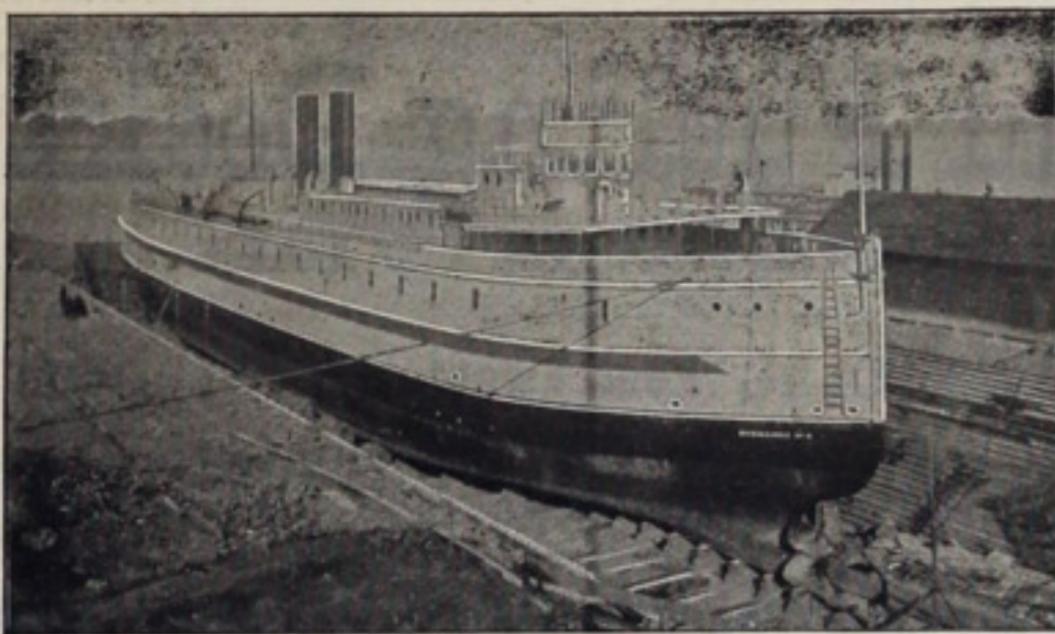
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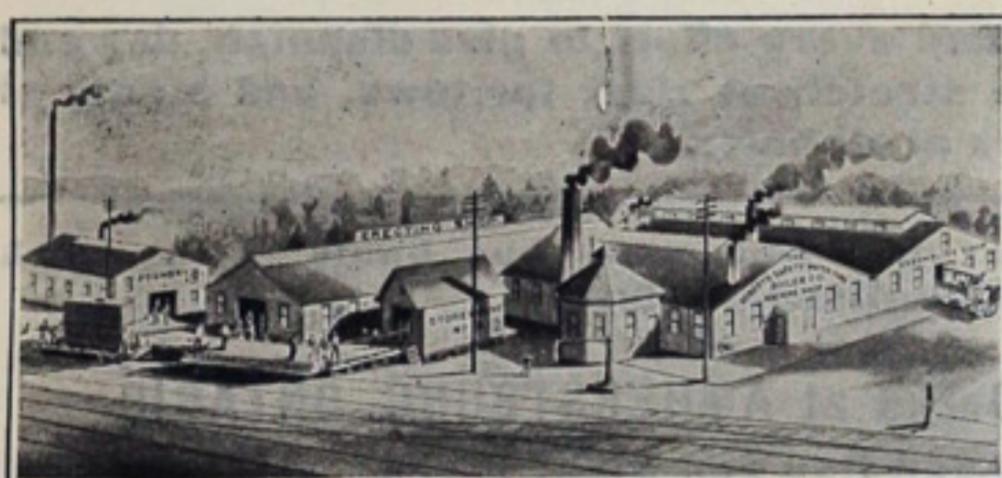
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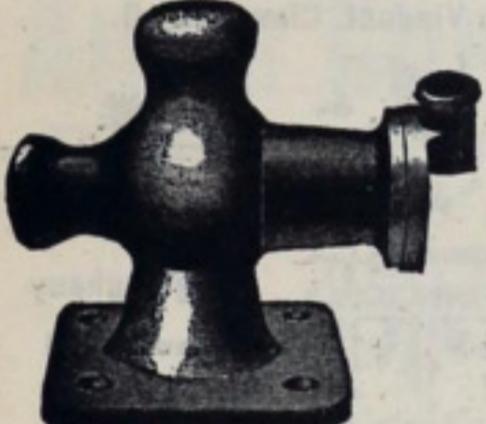
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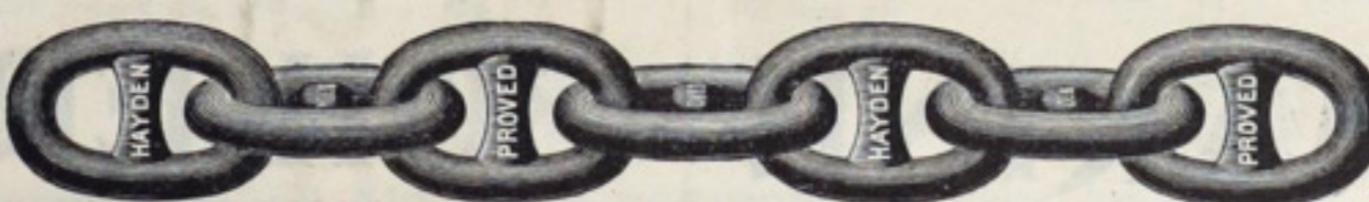
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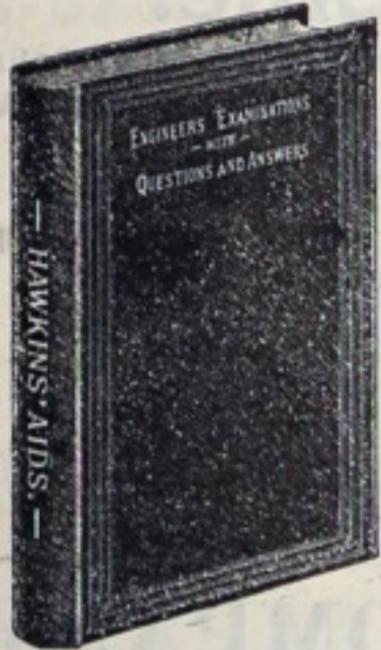
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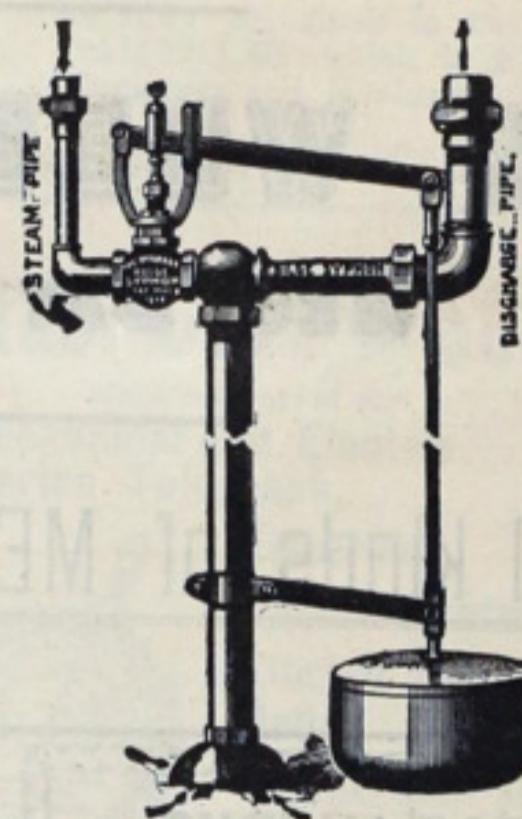
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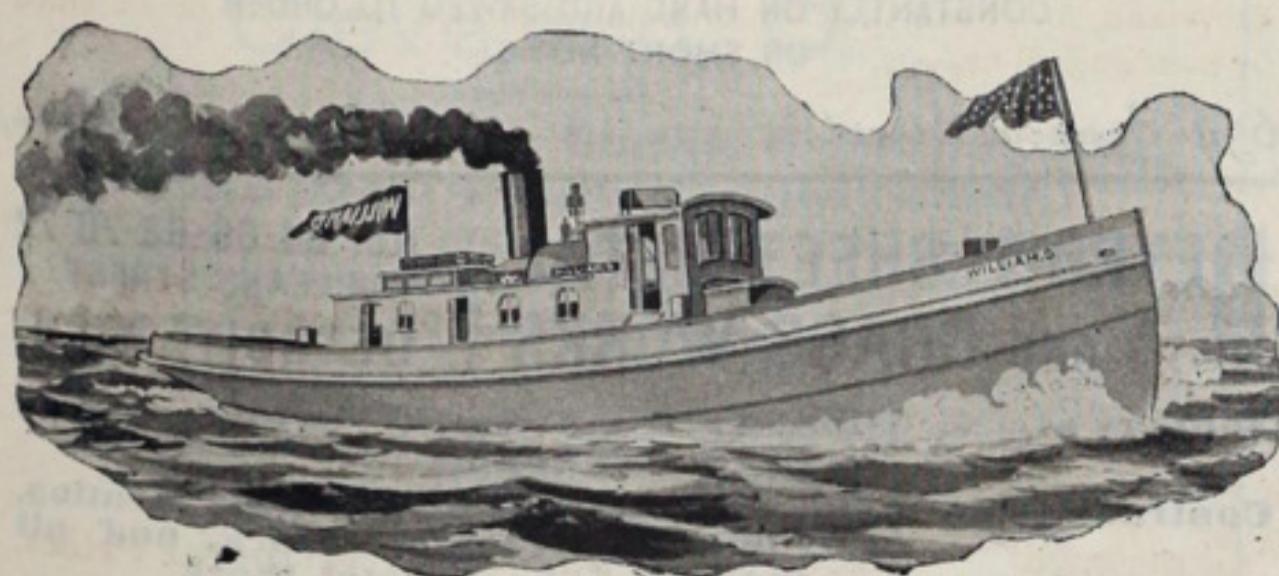
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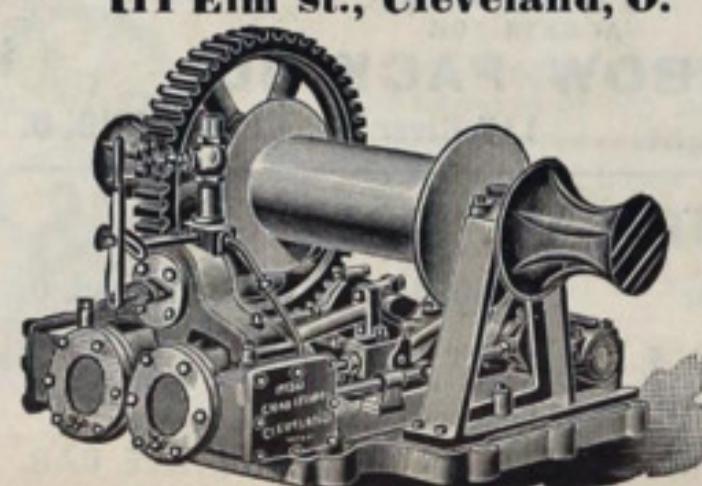
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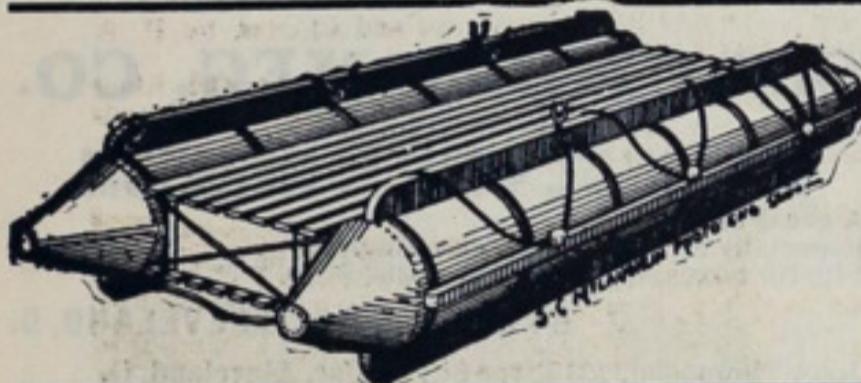
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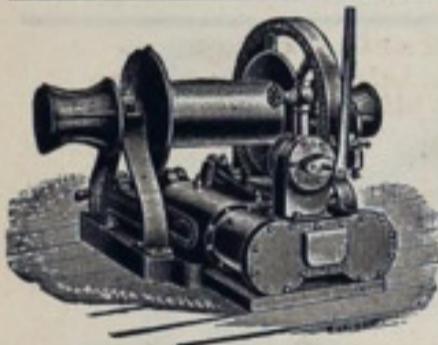
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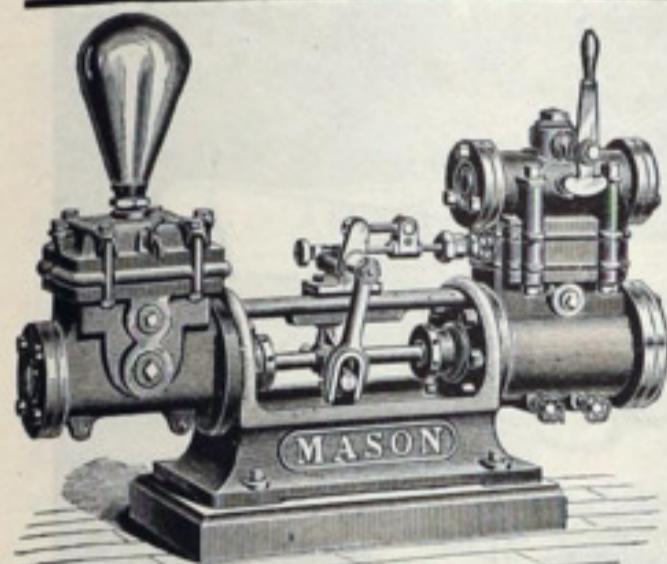
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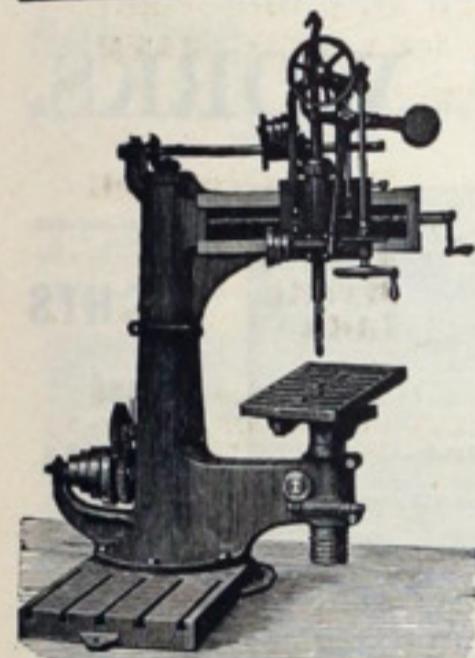
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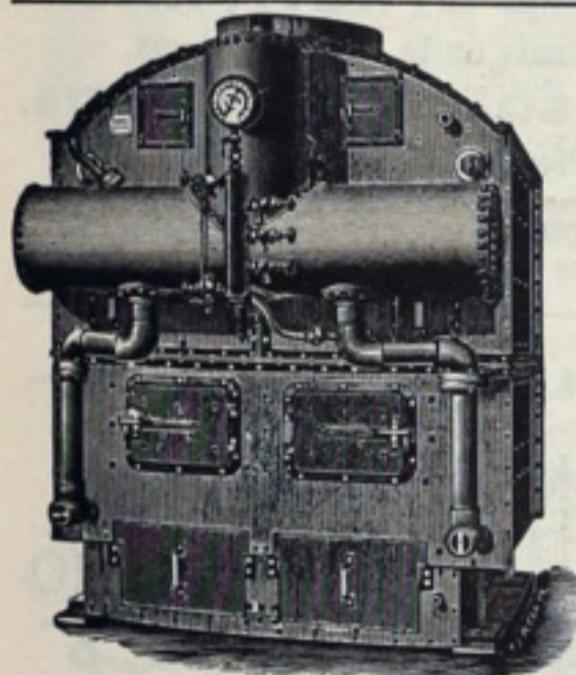
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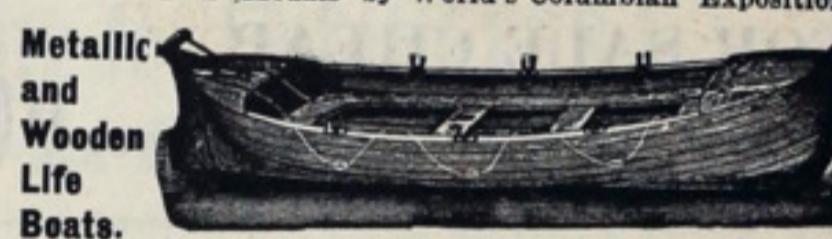
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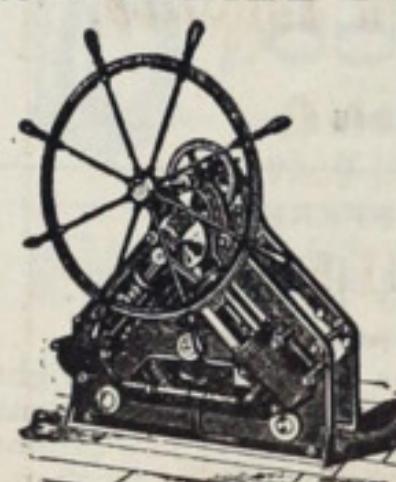
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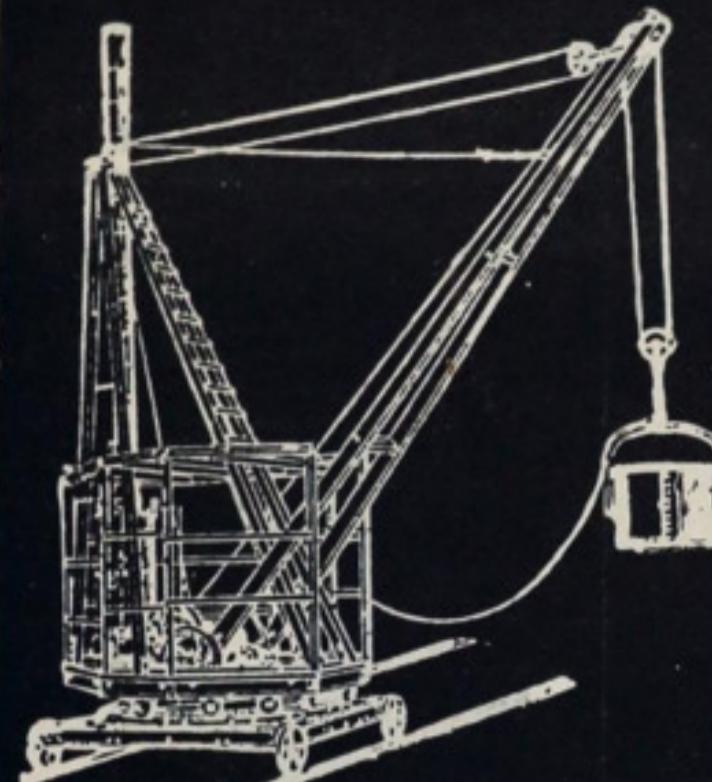
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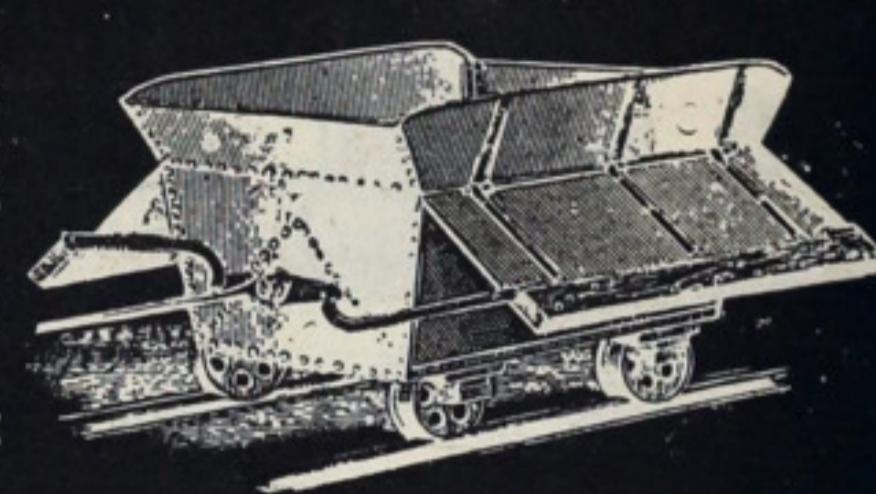


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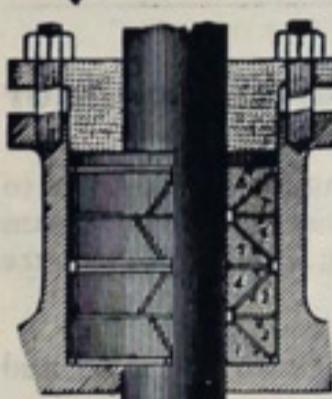
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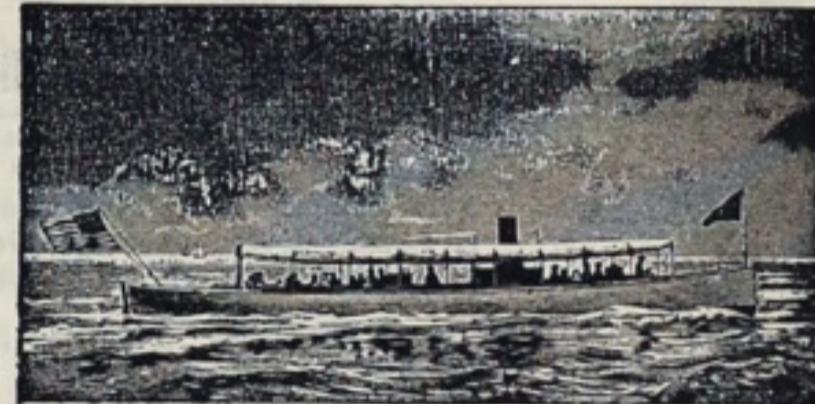
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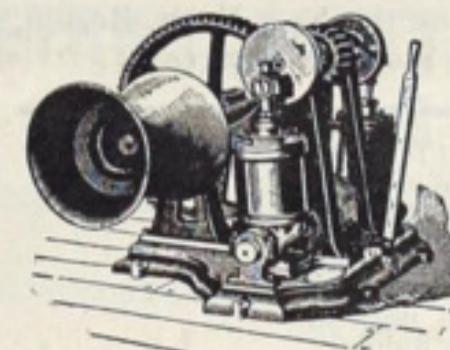
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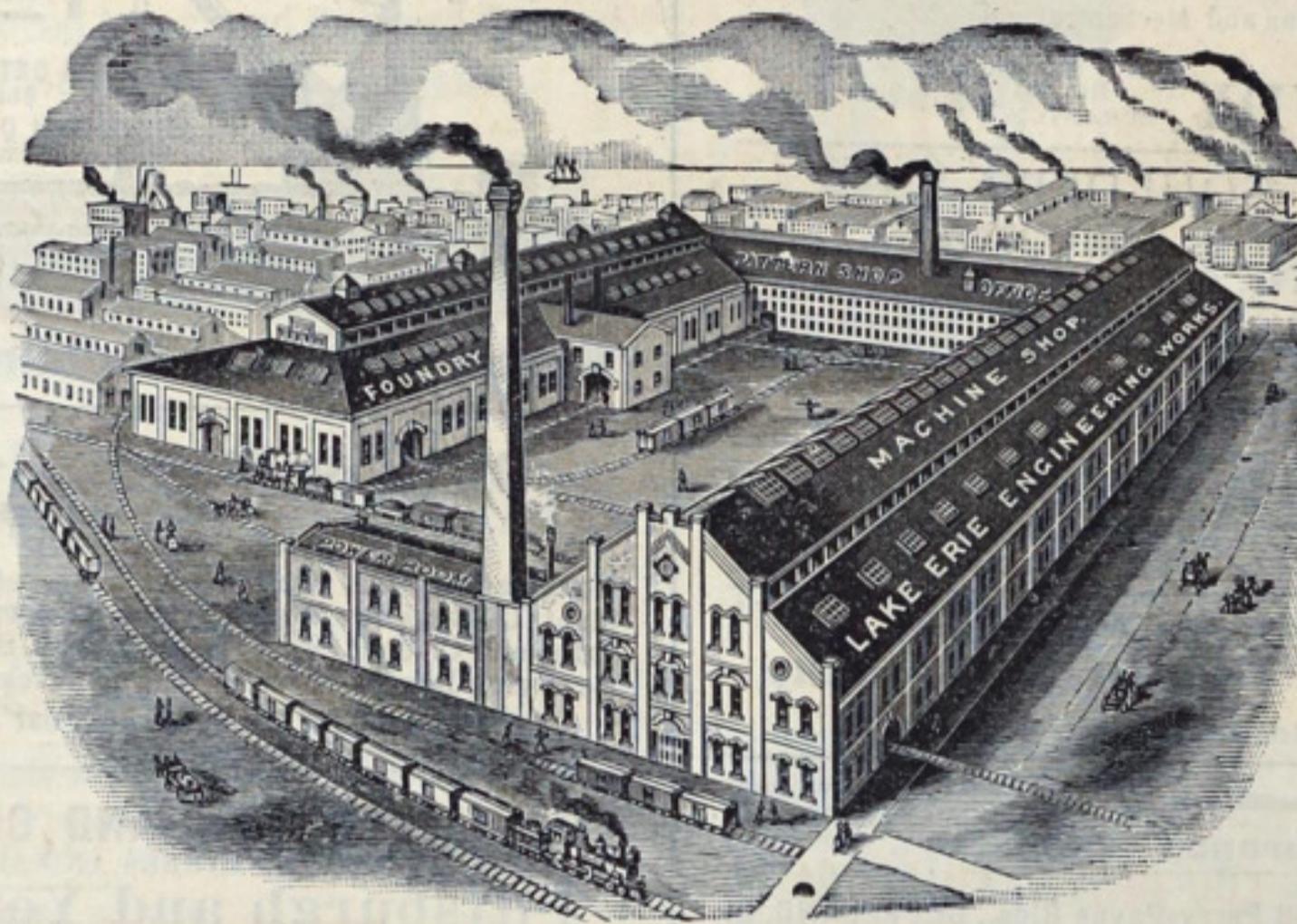
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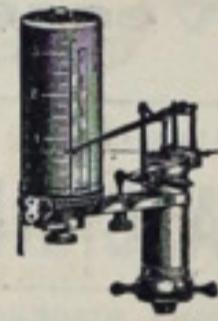
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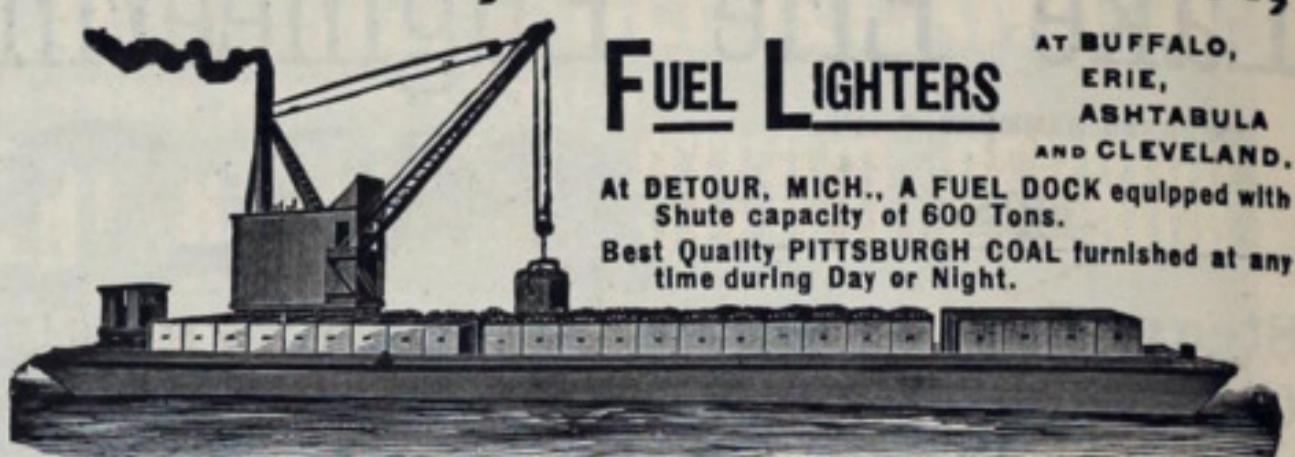
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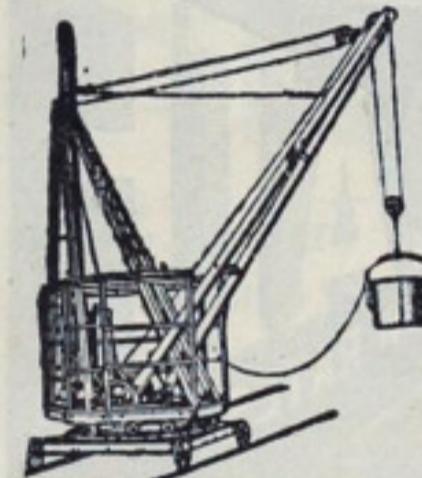
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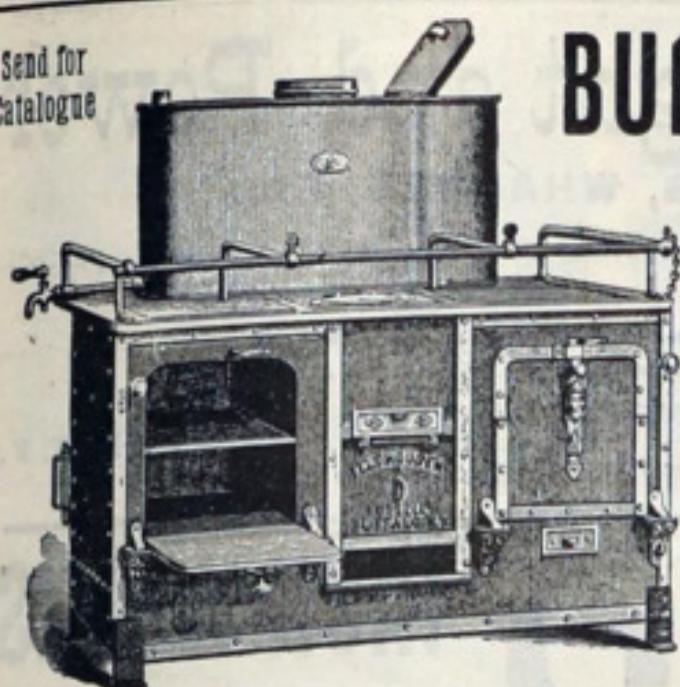
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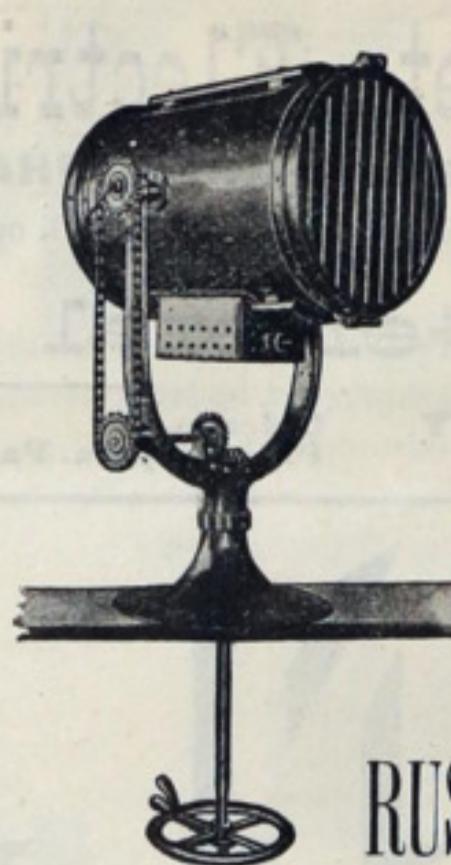
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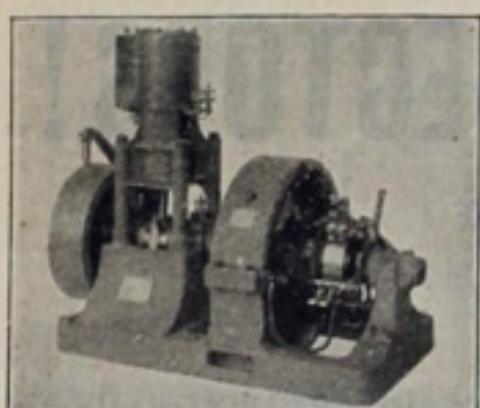
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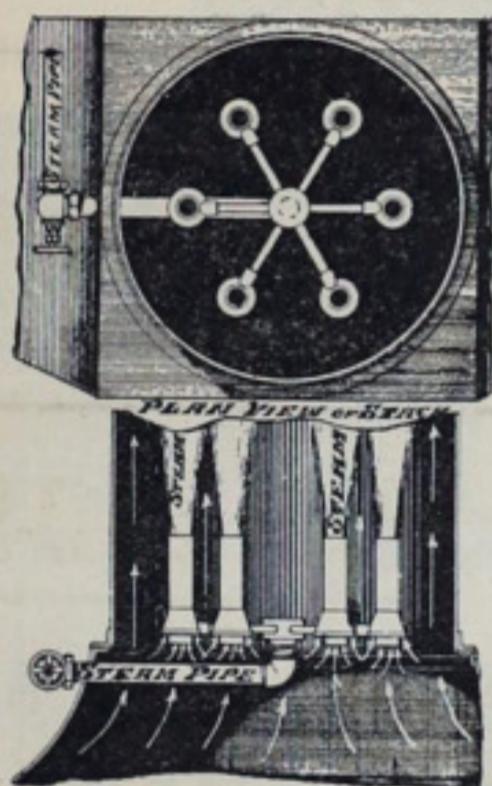
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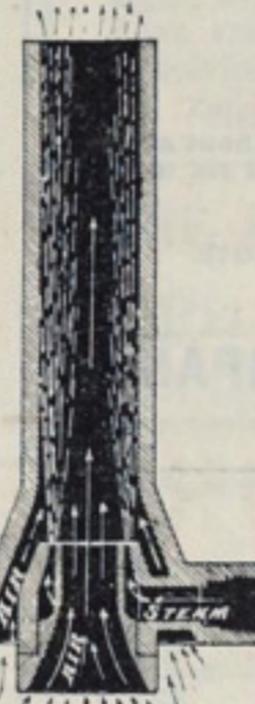
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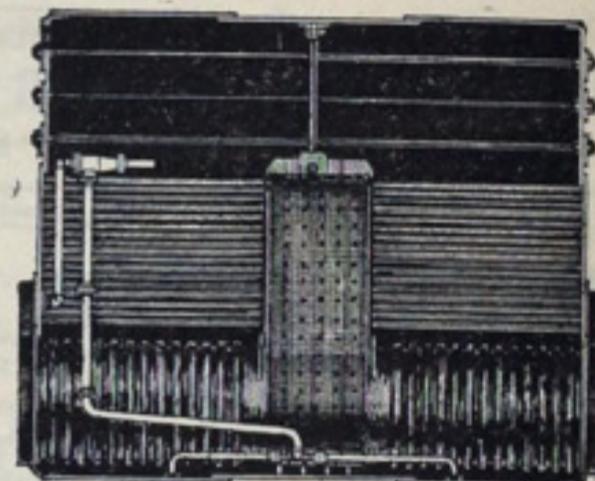
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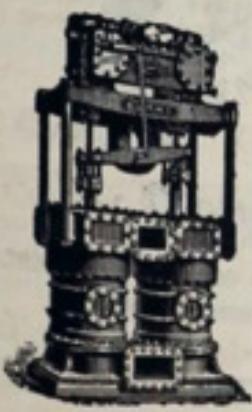
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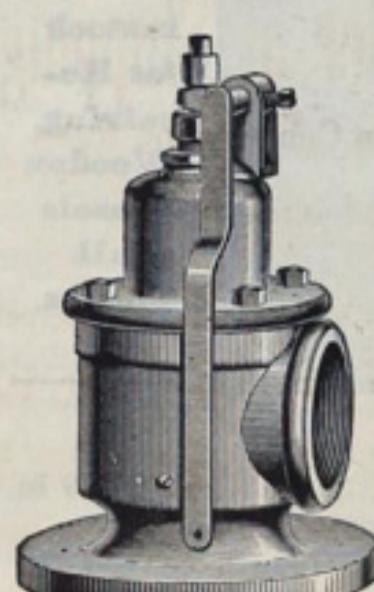
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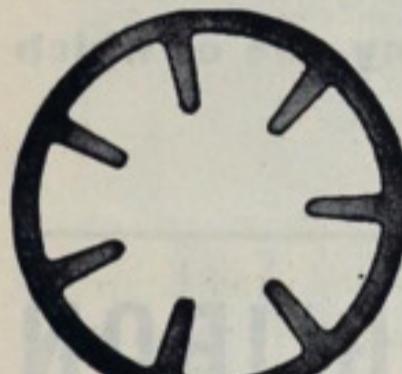
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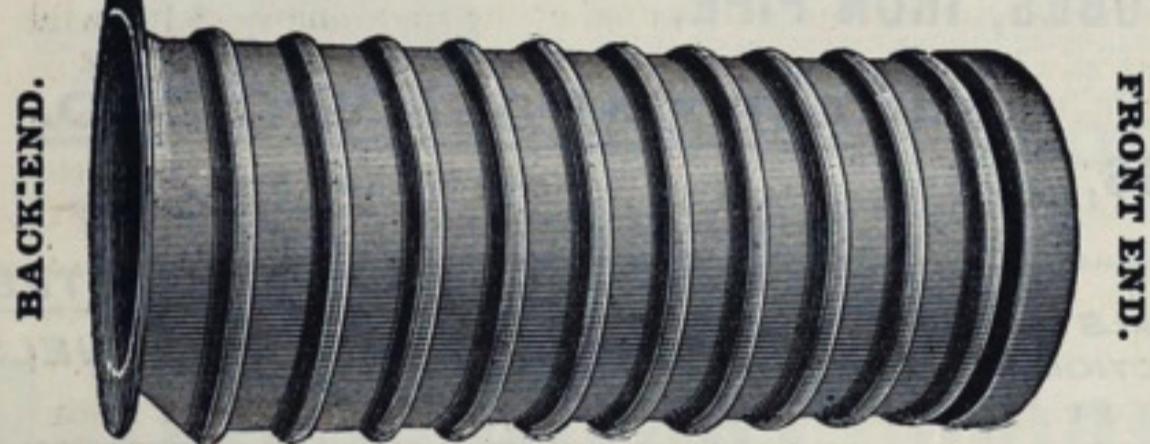
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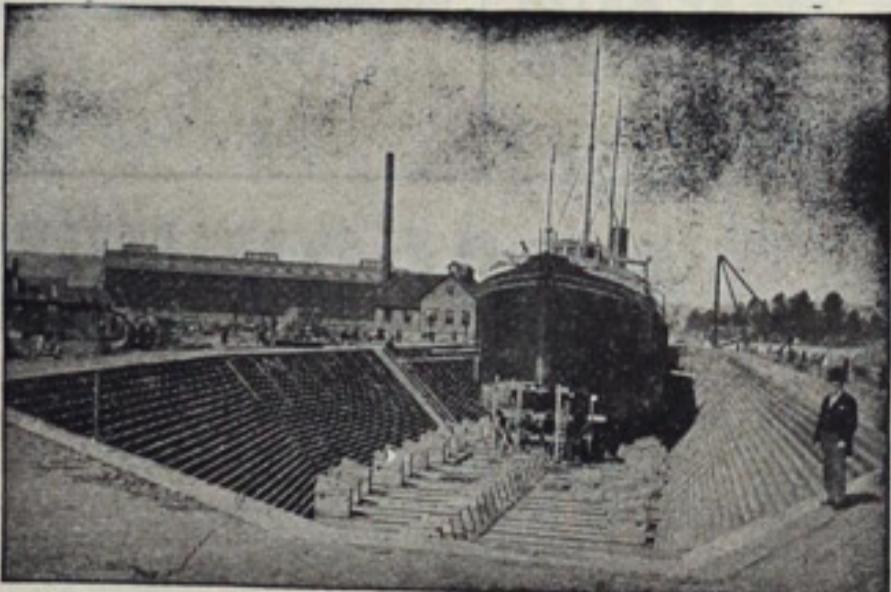
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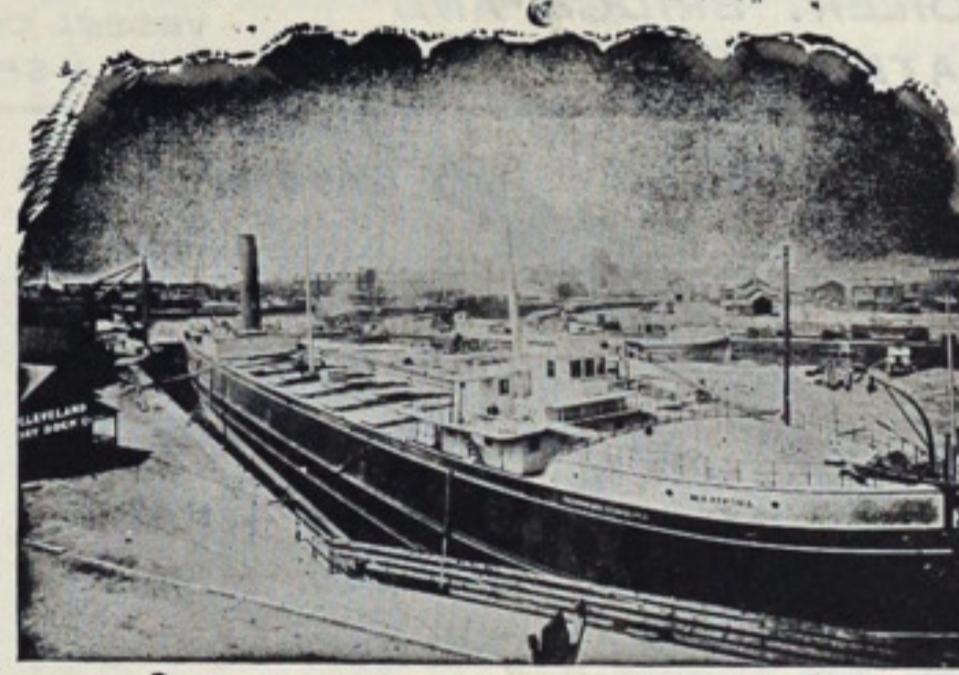


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